UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,907	10/20/2004	Takashi Ikeda	259608US2PCT	4221

22850 7590 09/25/2007

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
NG, EUNICE

ART UNIT	PAPER NUMBER
2626	

NOTIFICATION DATE	DELIVERY MODE
09/25/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/511,907	IKEDA, TAKASHI	
	Examiner	Art Unit	
	Eunice Ng	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-8 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-8 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 20 October 2004 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

2. The drawings are objected to under 37 CFR 1.83(b) because they are incomplete. 37 CFR 1.83(b) reads as follows:

> When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

3. The Specification starting at page 1, line 15, through page 3, and Brief Description of the Drawings at page 7, lines 27-28, discuss a **Fig.** 7 that is missing from the drawings. For the purposes of examination, the examiner has referred to the drawing of Fig. 7 in Japanese from PCT/JP02/05401, submitted 10/20/04.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haimi-Cohen *et al.* (hereinafter Haimi), US Patent No. 6,711,259 in view of Katayanagi, JP 07-240782 A.

Regarding claim 1, Haimi teaches a speech transmitting and receiving apparatus, comprising: "a microphone (mouth piece)" input (col. 5, ll. 25-26; Fig. 3, element 202). A microphone in a telephone, such as in Haimi (col. 1, ll. 9-18), converts sound waves from the human voice to an electrical analog signal. Haimi does not explicitly teach a first converter converting speech from an analog signal to a digital signal. However, it is old and well known in the art of telecommunications to convert speech from an analog signal to a digital signal using an analog-to-digital converter as evidenced by Katayanagi (see Abstract and Figure; "transmission audio signal obtained from a microphone 1 for transmission via an A/D converter").

It would have been obvious for one of ordinary skill in the art at the time the invention was made to include this feature because digital signals are less susceptible to "noise" than analog signals. Digital signals may also be compressed, thus reducing the amount of information that must be sent to have a usable signal at the other end.

Haimi teaches a speech encoder encoding a speech signal converted by said first converter into the digital signal (col. 5, ll. 34-52, teaches "Transmitter 216 preferably includes a speech encoder or a plurality of speech encoders for digital cellular applications, transmitter 216 may be employed in analog cellular...telephone applications as well");

a transmission processing circuit transmitting the speech signal encoded by said speech encoder (col. 5, ll. 34-52, "audio processing transmitter 216 is included for transmitting the noise suppressed input for processing"; Fig. 3, element 216);

a reception processing circuit receiving an encoded speech receiving signal (col. 5, ll. 53-63, "receiver 218"; Fig. 3, element 218);

a speech decoder decoding the speech receiving signal received by said reception processing circuit (col. 5, ll. 53-63, "Likewise, an audio processing receiver 218 preferably includes a speech decoder which decodes speech/data received from the network. Receiver 218 may include a plurality of speech decoders for digital cellular applications, receiver 218 may be employed in analog cellular...applications as well"); and

a sidetone circuit suppressing noise contained in the speech signal converted by said first converter into the digital signal to generate a sidetone to be added to the speech receiving signal decoded by said speech decoder (col. 5, ll. 28-34, teaches "side tone generator 206 is included...noise in the side tone is removed when the user is not speaking by making a side tone

gain, g_{sl} adjustable, and lowering the side tone gain g_{sl} when the user is not speaking. Side tone gain g_{sl} is preferably provided by a variable gain attenuator 207. The setting of the gain is done by a noise suppressor 208"; and col. 5, ll. 60-63, teaches "Side tone generator 206 includes an adder 222 for adding the input signal g_{sl} and a decoded signal from buffer 214; see Fig. 3).

Haimi does not explicitly teach, but Katayanagi teaches a second converter converting the speech receiving signal with the sidetone added from a digital signal to an analog signal (see Abstract; and Figure, element 15). It would have been obvious for one of ordinary skill in the art at the time the invention was made to convert the speech signal back to an analog signal so that the digital signal can be converted into a physical quantity, such as an electrical voltage, for output to an earpiece.

Regarding claim 2, Haimi, in view of Katayanagi, teaches wherein said sidetone circuit includes: a noise suppressor suppressing the noise contained in the speech converted by said first converter into the digital signal (col. 6, ll. 22-42 and Fig. 3, item 208, noise suppressor), and a sidetone level controller controlling a level of the speech signal with the noise suppressed by said noise suppressor, for output as the sidetone (col. 6, ll. 49-57, teaches "side tone gain adjustment...Noise suppressor...computes a gain for each frequency channel...gain may be used as the side tone gain"; see col. 5, ll. 23-63 and Fig. 3).

Regarding claim 3, Haimi teaches wherein said sidetone circuit includes: a noise suppressor suppressing the noise contained in the speech converted by said first converter into the digital signal (see col. 6, ll. 11-42 and Fig. 3, element 208, noise suppressor), and a sidetone

level controller controlling, according to a level of the speech signal with the noise suppressed by said noise suppressor and a level of the speech receiving signal decoded by said speech decoder, said level of the speech signal with the noise suppressed, for output as the sidetone (col. 6, ll. 49-57, teaches "side tone gain adjustment...Noise suppressor...computes a gain for each frequency channel...gain may be used as the side tone gain"; see col. 5, ll. 23-63 and Fig. 3).

Regarding claim 4, Haimi teaches wherein said sidetone circuit includes: a noise suppressor suppressing the noise contained in the speech converted by said first converter into the digital signal (Fig. 3, element 208, noise suppressor),

a background noise level detector detecting a level of background noise contained in the speech converted by said first converter into the digital signal (Fig. 2, element 112, background noise estimator), and

a sidetone level controller selecting one of the speech converted by said first converter into the digital signal and the speech signal with the noise suppressed by said noise suppressor according to the level of the background noise detected by said background noise level detector, and controlling a level of the selected speech signal for output as the sidetone (col. 6, ll. 49-57, teaches "side tone gain adjustment...Noise suppressor...computes a gain for each frequency channel...gain may be used as the side tone gain"; see col. 4, ll. 41-52; col. 5, ll. 23-63 and Fig. 3).

Regarding claim 5, Haimi teaches wherein said sidetone circuit includes: a noise suppressor suppressing the noise contained in the speech converted by said first converter into the digital signal (Fig. 3, element 208, noise suppressor),

a background noise level detector detecting a level of background noise contained in the speech converted by said first converter into the digital signal (Fig. 2, element 112, background noise estimator), and

a sidetone level controller selecting one of the speech converted by said first converter into the digital signal and the speech signal with the noise suppressed by said noise suppressor according to the level of the background noise detected by said background noise level detector, and controlling, according to a level of the selected speech signal and a level of the speech receiving signal decoded by said speech decoder, said level of the selected speech signal, for output as the sidetone (col. 6, ll. 49-57, teaches "side tone gain adjustment...Noise suppressor...computes a gain for each frequency channel...gain may be used as the side tone gain"; see col. 4, ll. 41-52; col. 5, ll. 23-63 and Fig. 3).

Regarding claim 6, Haimi teaches a speech transmitting and receiving apparatus, comprising: "a microphone (mouth piece)" input (col. 5, ll. 25-26; Fig. 3, element 202). A microphone in a telephone, such as in Haimi (col. 1, ll. 9-18), converts sound waves from the human voice to an electrical analog signal. Haimi does not explicitly teach a first converter converting speech from an analog signal to a digital signal. However, it is old and well known in the art of telecommunications to convert speech from an analog signal to a digital signal using an

analog-to-digital converter as evidenced by Katayanagi (see Abstract and Figure; "transmission audio signal obtained from a microphone 1 for transmission via an A/D converter").

It would have been obvious for one of ordinary skill in the art at the time the invention was made to include this feature because digital signals are less susceptible to "noise" than analog signals. Digital signals may also be compressed, thus reducing the amount of information that must be sent to have a usable signal at the other end.

Haimi teaches a noise suppressor suppressing noise contained in a speech signal converted by said first converter into the digital signal (see col. 6, ll. 22-42 and Fig. 3, item 208, noise suppressor);

a speech encoder encoding the speech signal with the noise suppressed by said noise suppressor (col. 5, ll. 34-52, teaches "Transmitter 216 preferably includes a speech encoder or a plurality of speech encoders for digital cellular applications, transmitter 216 may be employed in analog cellular...telephone applications as well");

a transmission processing circuit transmitting the speech signal encoded by said speech encoder (col. 5, ll. 34-52, "audio processing transmitter 216 is included for transmitting the noise suppressed input for processing"; Fig. 3, element 216);

a reception processing circuit receiving an encoded speech receiving signal (col. 5, ll. 53-63, "receiver 218"; Fig. 3, element 218);

a speech decoder decoding the speech receiving signal received by said reception processing circuit (col. 5, ll. 53-63, "Likewise, an audio processing receiver 218 preferably includes a speech decoder which decodes speech/data received from the network. Receiver 218

may include a plurality of speech decoders for digital cellular applications, receiver 218 may be employed in analog cellular...applications as well"); and

a sidetone circuit generating a sidetone according to the speech signal with the noise suppressed by said noise suppressor (col. 5, ll. 28-34, teaches "side tone generator 206 is included...noise in the side tone is removed when the user is not speaking by making a side tone gain, g_{st} adjustable, and lowering the side tone gain g_{st} when the user is not speaking. Side tone gain g_{st} is preferably provided by a variable gain attenuator 207. The setting of the gain is done by a noise suppressor 208"; and col. 5, ll. 60-63, teaches "Side tone generator 206 includes an adder 222 for adding the input signal g_{st} and a decoded signal from buffer 214; see Fig. 3).

Haimi does not explicitly teach, but Katayanagi teaches a second converter converting the speech receiving signal with the sidetone added from a digital signal to an analog signal (see Abstract; and Figure, element 15). It would have been obvious for one of ordinary skill in the art at the time the invention was made to convert the speech signal back to an analog signal so that the digital signal can be converted into a physical quantity, such as an electrical voltage, for output to an earpiece.

Regarding claim 7, Haimi teaches wherein said sidetone circuit includes a sidetone level controller controlling a level of the speech signal with the noise suppressed by said noise suppressor, for output as the sidetone (col. 6, ll. 49-57, teaches "side tone gain adjustment...Noise suppressor...computes a gain for each frequency channel...gain may be used as the side tone gain"; see col. 4, ll. 41-52; col. 5, ll. 23-63 and Fig. 3).

Regarding claim 8, Haimi teaches wherein said sidetone circuit includes a sidetone level controller controlling, according to a level of the speech signal with the noise suppressed by said noise suppressor and a level of the speech receiving signal decoded by said speech decoder, said level of the speech signal with the noise suppressed, for output as the sidetone (col. 6, ll. 49-57, teaches "side tone gain adjustment...Noise suppressor...computes a gain for each frequency channel...gain may be used as the side tone gain"; see col. 4, ll. 41-52; col. 5, ll. 23-63 and Fig. 3).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

King (US Patent App. Pub. 2003/0063736) teaches systems and methods for side-tone noise suppression.

Feltström *et al.* (US Patent 6,768,795) teaches side-tone control within a telecommunication instrument.

Michel *et al.* (US Patent 6,041,118) teaches architecture for telephone set allowing independent control of volumes of the received signal and sidetone.

Watanabe (US Patent 5,640,450) teaches speech circuit controlling sidetone signal by background noise level.

Carter (US Patent 6,801,623) teaches software configurable sidetone for computer telephony.

Drawbridge *et al.* (US Patent 5,946,391) teaches telephones with talker sidetone.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eunice Ng whose telephone number is 571-272-2854. The examiner can normally be reached on Monday through Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EN
9/11/07

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600